CODA TECHNOLOGIES INC.

AMPLIFIER v10
OPERATION MANUAL

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CAUTION

WARNING

CAUTION: TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE, REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

THIS SYMBOL IS TO ALERT YOU OF THE PRESENCE OF UNINSULATED DANGEROUS VOLTAGE WITHIN THE UNIT'S ENCLOSURE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.

THIS SYMBOL IS INTENDED TO ALERT YOU OF THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE UNIT.

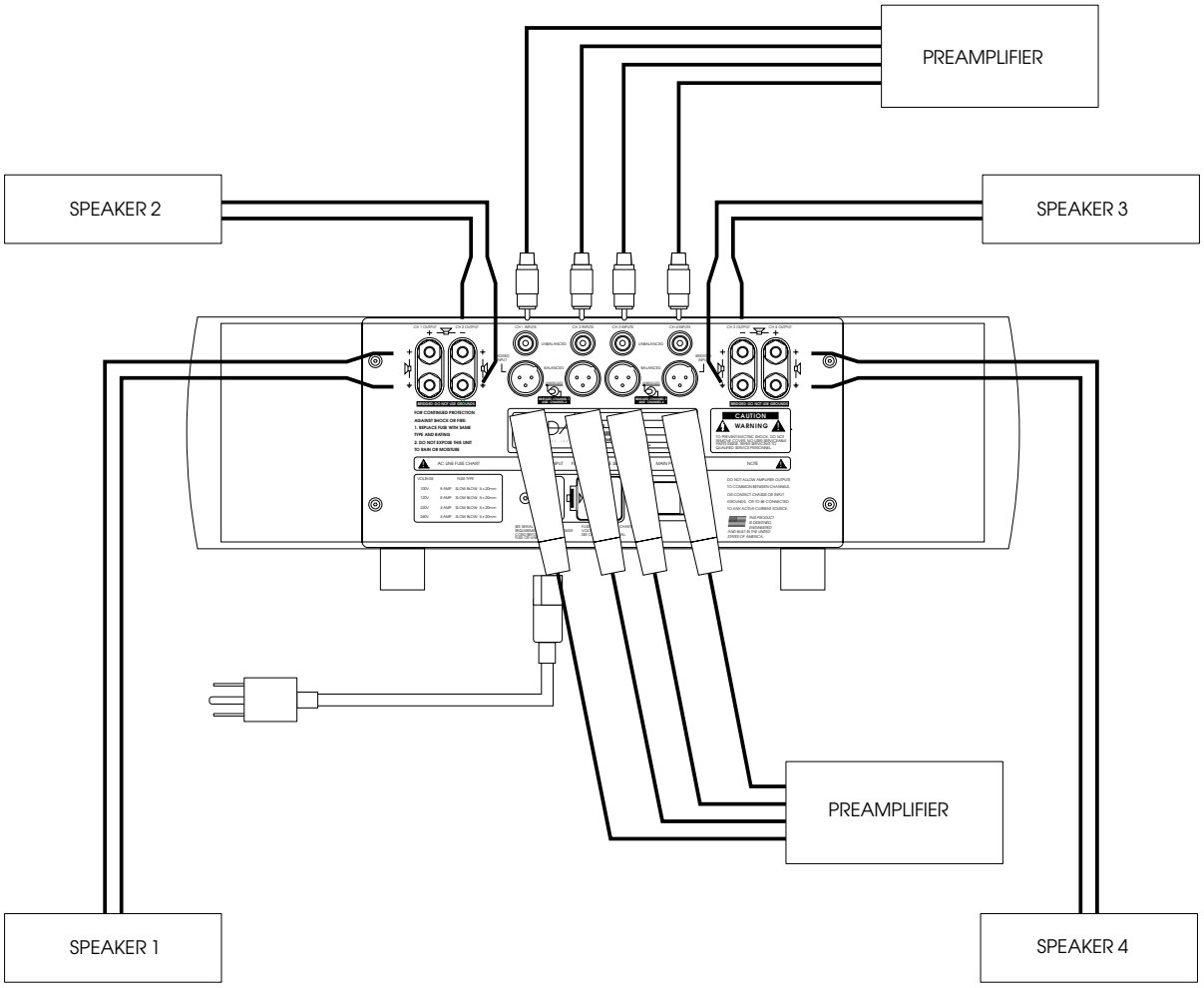
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. TO AVOID ELECTRICAL SHOCK, DO NOT OPEN THE UNIT. REFER SERVICING TO QUALIFIED PERSONNEL.

CAUTION - Never install or remove the power cord from the chassis unless it has been disconnected from the AC power source first.

- Never pull on the power cord when removing it from an AC power source. Grasp it by the plug.
- Do not leave the power cord connected to an AC power source unless it is connected to the unit.
- It is recommend that during extended periods of nonuse that the units power cord be unpluged from its AC power source.
- Route the AC power cord so that it will not be damaged or walked on.

This amplifier is a precision device, designed in an effort to provide the listener with unmatched sound quality, design, and construction. In order to operate your amplifier properly and to realize all of the capabilites of the AMPLIFIER v10, we recommend that you read this entire manual carefully.

The first section of the installation instructions for the AMPLIFIER v10 is a diagram of the default four channel configuration required to bring this amplifier into an operating mode. These brief steps will allow you to begin operating your system. Make sure during installation that the main AC power switch on the back of the AMPLIFIER v10 is turned off. While the diagram may be self explanatory, we strongly recommend that you read the detailed instructions following this introductory section.



I. Source-Output, Power Connections and Controls

The connectors and controls are clearly marked on the back panel of the AMPLIFIER v10. Note the correct channel orientation. The function and channel markings on the rear panel correspond to the front panel controls and their signal paths.

1. The MODE switch selects between unbridged or bridged operation. The default position is UNBRIDGED. For information on bridging see BRIDGE SETUP.

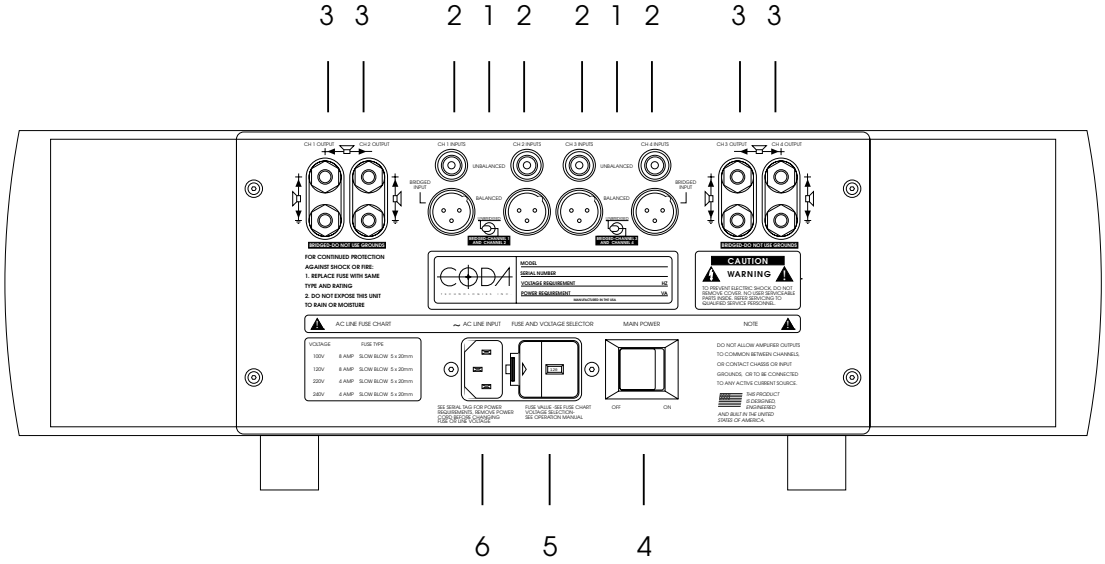
2. The UNBALANCED and BALANCED inputs should be attached to the appropriate unbalanced and balanced outputs of a preamplifier either directly or through a crossover or processor, as appropriate to the application.

3. The CH1 OUTPUT, CH 2 OUTPUT, CH 3 OUTPUT, CH 4 OUTPUT should be attached to four or three or two speakers. This will depend on how many channels are bridged.
NOTE: THERE ARE NO OUTPUT FUSES SO AS TO INSURE A LOW OUTPUT IMPEDANCE. SPEAKER PROTECTION IS LEFT TO THE SPEAKER MANUFACTER AS THEY WOULD BEST KNOW HOW TO PROTECT THEIR SPEAKER.

4. The MAIN POWER switch, once all appropriate connectsions are made, may be left on as the AMPLIFIER v10 draws a negligible amount of current when the BIAS is turned off.

5. The FUSE AND VOLTAGE SELECTOR houses a 5 X 20 slow blow fuse and voltage selector cartridge. Should the fuse blow, contact a Coda dealer or call Coda directly. When changing the fuse, or altering the voltage selection be sure this unit is disconected from its AC power source.

6. The AC LINE INPUT should be attached to the power cable provided with the amplifier. After making the appropriate connections insert the three prong safety plug into an appropriate AC power source. Once the AMPLIFIER v10 is properly connected, the power switch may be turned on and the led on the front panel will light indicating a ready state.



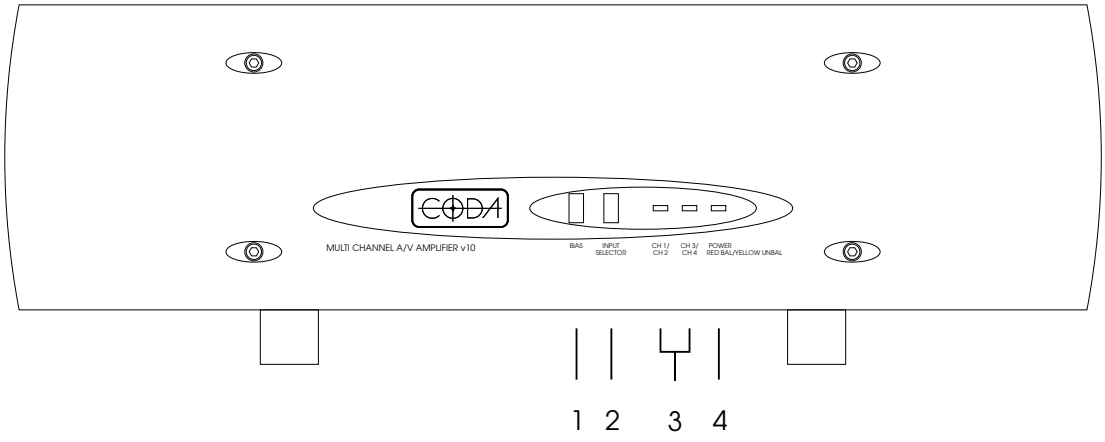
II. Front Panel Control Functions and Indicators

1. The BIAS button turns on the bias and opens shunting relays that mute the input.

2. The INPUT SELECTOR button switches between the balanced and unbalanced inputs.

3. These LEDs when lit, indicate that the bias is activated in the AMPLIFIER v10.

4. This two color LED indicates that the main power is on. When it is red the balanced inputs are in use. When it is yellow the unbalanced inputs are in use.



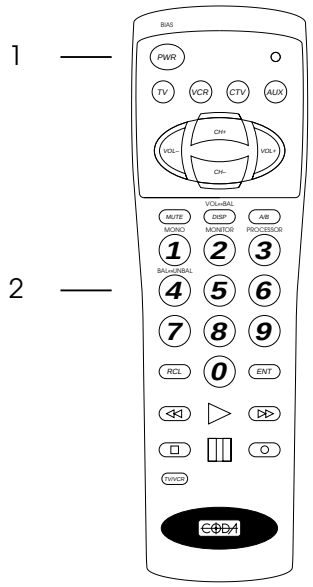
Note: If a power interruption occurs to the system the AMPLIFIER v10 defaults to bias off.

III. Remote Control

The AMPLIFIER v10 may be operated by remote control. To operate, set the universal remote to *AUX*. The provided universal remote can be used to control other Coda products as well as many other audio and video components. For instructions on the remotes other capabilities, refer to the Universal Remote Control Manual.

1. The BIAS button turns on the bias and opens shunting relays that mute the input.

2. The BAL«»UNBAL button switches between the balanced and unbalanced inputs.



Note: If a power interruption occurs to the system the AMPLIFIER v10 defaults to bias off.

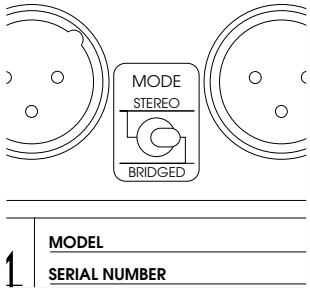
III. BRIDGED SETUP

WARNING: DO NOT OPERATE THIS AMPLIFIER WITH THE TOP COVER REMOVED. NEVER MAKE ANY INTERNAL ADJUSTMENTS WHILE THIS AMPLIFIER IS CONNECTED TO AN AC POWER SOURCE.

BRIDGED operation consists of one, or both sets of AMPLIFIER v10 channels. The amount of power from a four channel AMPLIFIER v10 is 100 Watts with 8 Watts class A per channel. A bridged AMPLIFIER v10 has 400 Watts with 8 Watts class A per set of channels. To bridge, set the MODE switch on the back of the amplifier to the BRIDGED position.

NOTE: TURN THE MAIN AC POWER SWITCH ON THE BACK OF THE AMPLIFIER v10 OFF BEFORE ALTERING THE MODE SWITCH OR CONNECTING OR DISCONNECTING ANY CABLES.

Back of AMPLIFIER v10

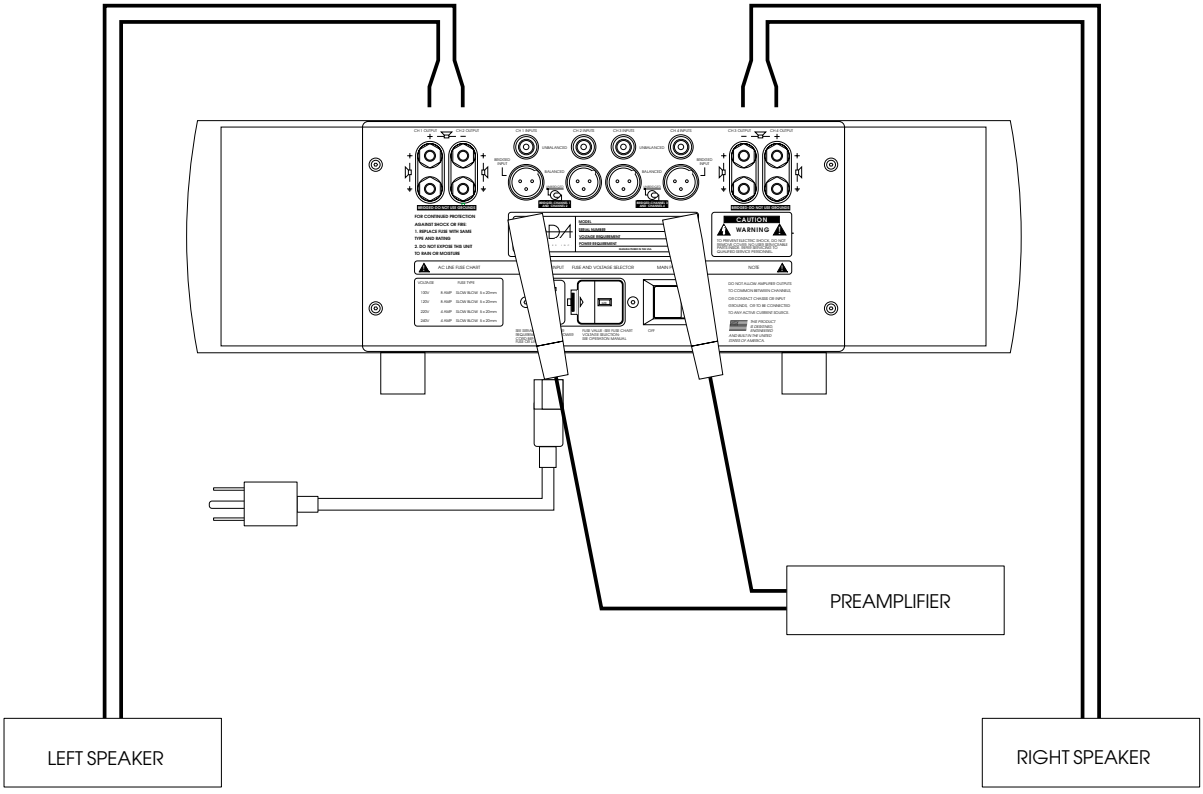


The bridging switch commons the inputs of the AMPLIFIER v10, were pin 2 of the left XLR commons with pin 3 of the right XLR, and pin 2 of the right XLR commons with pin 3 of the left XLR.

The set up diagram for BRIDGED operation is on the following page.

BRIDGED set up diagram

Before setting up the BRIDGED AMPLIFIER v10, read the entire DETAILED INSTALLATION section of this manual. As stated on the previous page, either the left set or right set, or both sets of channels may be bridged.



I. Design Philosophy and Approach

The subtlety of the design process at this level of performance makes it impossible to easily explain all of the advantages inherent in the Amplifier v10. However, we present here an overview to give you an understanding of some of its unique features and an idea of the listening experience you can expect. Often a particular technique has numerous unrelated advantages and possibilities. We make every effort to exploit these advantages with the final result being an amplifier that is greater than the sum of its individual features

The topology and component selection is built on the foundation established by the Amplifier System 100. Balanced interconnections are provided to take advantage of their greater noise rejection as in the 100. Differential voltage gain throughout provides exceptional rejection of external noise and contributes to the inherent DC stability of the circuit. This allows direct coupling without servo circuitry. The unit also uses output followers operating without feedback.

The front end of the Amplifier v10 is designed to operate without ever entering Class B operation as is common in many other designs. This combined with excellent high frequency design insures linear operation at high speed, and translates into a sonic reproduction which is extremely transparent in character. The supply takes a very direct approach to high performance. First, a top quality toroid transformer and over 100,000 uf of capacitance with very low ESR and inductance is used. For optimum performance and reliability all circuity remains continuosly powered.

The specifications are consistent with what would be expected in a high current amplifier design. In this design , however , an unusual degree of attention has been paid to sonically meaningful parameters.

For example, the current stage is capable of producing peak currents in excess of 60 Amperes with a degree of linearity and speed which is not matched by other designs when producing only a fraction of of this current. This is achieved by the implementation of several distinct circuit features.

In the Amplifier v10 extremely wide bandwidth output transistors are used instead of the usual TO3 devices which are used in other transistor designs. Each channel uses 8 individual output transistors with a combined power rating of 1600 Watts and 60 Amperes with a bandwidth of 10 Mhz.

The manner in which the Amplifier v10 accomplishes Class A/AB operation is also different than that employed in conventional designs. All Class AB designs leave Class A operation when they are operated into loads of sufficiently low impedance or power levels. Generally, this transition will produce a large and abrupt distortion increase.

The Amplifier v10 uses bias voltages and component values which have been specifically selected to produce a precision transition with no abrupt changes in distortion or output impedance. This "Precision Bias" technique yields seemless performance regardless of the complexity of the load impedance and is particularly effective at eliminating a form of IM distortion which often occurs in these instances.

To maintain "Precision Bias" requires an advanced bias circuit that must have a very high degree of stability under a wide range of temperatures and load conditions. The usual bias network is of such high impedance and poor thermal regulation that at the extremes of operation, bias currents are ineffectively controlled. Advanced tracking techniques results in absolute control of bias curents under all conditions in the Amplifier v10.

The main power supply of the amplifier consists of a 1000VA toroidal power transformer with dual rectifiers to isolate one set of channels from the other. One hundred thousand microfarads of total capacitance provide effective filtering.

The above attributes result in a amplifier of such extreme linearity and bandwidth that no overall feedback correction is required or used. One advantage of this is a high degree of immunity from interactions with loads or cables and a superior transient response. An extremely low nonreactive output impedance is maintained well beyond 20,000 hz. The resulting uniform damping factor is not usually found in other designs.

The Amplifier v10 has all structural parts made of machined aluminum which are milled to very close tolerances yielding the seemless appearance characteristic of previous products from Coda. As with all Class A/AB amplifiers, heat dissipation is important. The Amplifier v10 uses two massive heat sinks for efficient, noiseless, and clean thermal relief. The thermal coefficient of the heat sinks is one of the lowest and most effective in the audio industry.

II. Parts' Quality

1. Finishes - All exterior metal parts are anodized or powder coated. Anodizing for its multiple finishing and powder coating for durability.

2. Circuit Boards - Circuit boards are fiberglass epoxy with gold plating over a tin/nickel barrier. This gold layer will not corrode, while the barrier plate prevents the gold from migrating to the lower copper layer and detracting from its appearance.

3. Resistors - All are high reliability metal film 1% resistors for 1/4 watt and 5% for 1 watt.

4. Capacitors - All capacitors have been eliminated where possible on the premise that "no cap is better than the best cap." The only electrolytics used are in the power supply where large numbers provide enormous filtering capacitance for the supply.

5. Semiconductors - There are no integrated circuits (IC) in the signal path. Very high quality dual FETs were selected for their superb noise performance and precision matching. The remaining semiconductors are also of very high quality, each possessing parameters ideally suited for the specific application.

6. Connectors - Coda employs a standard RCA configuration with a gold plated case. The XLR input and output connectors are manufactured by Neutrik of Switzerland. Speaker connecters are also gold plated.

7. Wire - All signal wire has been eliminated whenever possible. Where wire is used, Coda employs solid silver and silver plated copper, 141 strand, 18 guage wire with a silicone insulation.

AMPLIFIER v10

Rated Power:	100 Watts with 25 Watts class A @ 8 Ohms both channels driven from 20Hz to 20kHz
Frequency Response:	DC to -3dB @ 100kHz
Distortion:	< .1 percent from 10Hz to 20kHz @ 100 Watts both channels driven into 2 Ohm through 8 Ohms
Gain:	26dB
Maximum Current:	>60 Amperes peak per channel
Noise:	-100dB referenced to rated output
input Impedance:	50k Ohms unbalanced/1k Ohms balanced
Output Impedance:	.08 Ohms from 20Hz to 20kHz

BRIDGED

Rated Power:	400 Watts with 25 Watts class A @ 8 Ohms mono from 20Hz to 20kHz
Frequency Response:	DC to -3dB @ 100kHz
Distortion:	< .1 percent from 10 Hz to 20kHz @ 400 Watts driven into 4 Ohms through 8 Ohms
Gain:	32dB
Maximum Current:	>60 Amperes peak
Noise:	-100dB referenced to rated output
Input Impedance:	1k Ohms unbalanced/1k Ohms balanced
Output Impedance:	.15 Ohms from 20Hz to 20kHz

SUPPLY 1000 VA toroidal power transformer and 100,000 uF of capacitance

DIMENSIONS

Height:	5.25" Faceplate, 6.0" Overall
Width:	19.0" Faceplate, 17.0" Chassis
Depth:	12.5" Overall
Weight:	45 lbs., 50 lbs., Shipping
Power requirement:	450 Watts maximum at rated power

The interior of the unit requires no special care. If it becomes necessary to clean the exterior, a simple dusting may be all that is required. If a cleaner is necessary, any dilute commercial ammonia based product will be appropriate. NEVER use any abrasive rags, cleaners or chemical solvents on the AMPLIFIER v10.

When handling the unit, take care not to mar the aluminum. Aluminum is a medium hardness metal and can be scratched by the harder tool steels.

Avoid exposing the unit to direct sunlight, and keep it away from sources of intense heat.

Do not throw away the carton or associated packing material. They are ideal if you need to pack the unit for moving and in the unlikely event that servicing is needed, they will be necessary for safe shipment.

Be sure to provide adequate insurance when shipping.

I. Warranty- Any failure of the Amplifier v10 to operate or to meet specifications, applicable at time of manufacture, due to a manufacturing defect or component failure, will be corrected by Coda Technologies, Inc. without charge for parts, or labor for a period of **ten years** from date of original purchase. Coda Technologies, Inc. will provide for surface transportation to and from the factory from an authorized Coda Technologies, Inc. dealer for a period of one year from date of purchase.

II. Procedure- **If the Amplifier v10 should require service under warranty, take it with proof of purchase date, with its carton and packing material, to a Coda Technologies, Inc. dealer.** The dealer will arrange for service. Direct shipments to the factory will be accepted at the discretion of the company. Coda Technologies, Inc. products purchased outside of the U.S. will be covered by those warranty conditions extended by the importing distributor which may differ in some respects from those given above. Warranty service, if required, is the responsibility of the importing distributor. If a Coda Technologies, Inc. product is removed from the country of original purchase, Coda Technologies, Inc. distributors or dealers are not obligated by the conditions of this warranty and repairs will be affected at their discretion.

III. Exclusion of Coverage- At the sole opinion of Coda Technologies, Inc. the following situations are specifically excluded from coverage:

1. Any Amplifier v10 not operated in accordance with the instructions contained in this manual, or otherwise subjected to abuse, tampering, modification, accidental damage, or serial number defacement.

2. Damage to other property caused by any defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss, or any other damage whether incidental, consequential, or otherwise.

3. It is Coda Technologies, Inc. policy to extend coverage when reasonable doubt exist; however, freight charges will be billed for any units returned under warranty and found by the company to be operating according to specification.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Coda Technologies, Inc. continually researches new techniques, designs, and construction methods and so reserves the right to introduce refinements into current product lines without notice or obligation. The company may offer product modifications to make these refinements available to earlier production units.

Fill in and retain this copy of the warranty registration sheet for your records .

MODEL DESIGNATION:_____

SERIAL NUMBER:_____

DATE OF PURCHASE:_____

PLACE OF PURCHASE

Dealer:_____

Address:_____

City:_____ State:____ Zip:_____

Phone:_____

PURCHASER

Name:_____

Address:_____

City:_____ State:____ Zip:_____

Phone:_____

NOTES: _____

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Please fill in and send this copy of the warranty registration sheet to Coda Technologies, Inc. Include copy of proof of purchase.

MODEL DESIGNATION:_____

SERIAL NUMBER:_____

DATE OF PURCHASE:_____

PLACE OF PURCHASE

Dealer:_____

Address:_____

City:_____ State:____ Zip:_____

Phone:_____

PURCHASER

Name:_____

Address:_____

City:_____ State:____ Zip:_____

Phone:_____

NOTES:_____

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